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Maple Mountain

Ministry of Industry
and Tourism
Province of Ontario

Marshall
Macklin
Monaghan

**Marshall Macklin Monaghan
Limited**

Engineers
Surveyors
Planners
Environmental Consultants

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Ministry of Industry & Tourism,
900 Bay Street,
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May 4, 1973
File: 11-72131



Re: Maple Mountain

Gentlemen:

We are pleased to submit our report on the proposed Maple Mountain recreational development.

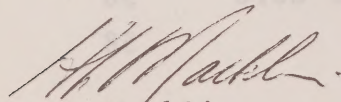
The report has been prepared in accordance with the revised terms of reference. It includes development of a conceptual land-use plan and the basic community form. It also includes the infrastructure, that is, transportation, water, sanitary and storm drainage facilities, with preliminary capital cost estimates for these services.

We wish to express our thanks for the co-operation and assistance received from the other consultants involved on this most interesting project. We also want to thank Mr. Wimbs, Mr. Burt and you for the assistance given by the Ministry.

We appreciate the opportunity of working with you on this assignment and look forward to participation in the subsequent development phases of Maple Mountain.

Yours very truly,

MARSHALL MACKLIN MONAGHAN LIMITED


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1. SUMMARY

The Ministry of Industry and Tourism is currently investigating the feasibility of a new, major recreational development at Maple Mountain in Northern Ontario. The proposal, developed by the staff of the Ministry, together with members of a Consultants' Team, provides for a self-contained, fully-serviced community including recreational, residential and commercial facilities.

Marshall Macklin Monaghan Limited has undertaken the development of land-use plans and urban design features for the established community components. In addition, the requirements for transportation, water, sanitary and storm drainage services have been established and preliminary capital cost estimates prepared for these services.

The majority of the residential and commercial facilities will be located in a village centrally located with respect to the recreational facilities. The village concept is premised on a strong pedestrian orientation. The population of the village has been established at approximately 6,000 persons. This is the maximum number of persons that can be accommodated within the village without incurring unreasonable walking distances, thus negating the pedestrian-oriented concept. The village population is compatible with the capacity of the downhill ski facilities. The compactness of the village, not only reflects the pedestrian orientation, but also reduces servicing costs which are relatively expensive due to the nature of the site. Accordingly, the development of the village to a user population of 6,000 must be considered as an ultimate population. To enlarge the village further would result in the loss of the pedestrian concept. An increase in population would be accommodated at alternative sites separate from the main village.

The ultimate development is expected to include the following

major building spaces:

	Square Feet of Gross Floor Area
Base and Lookout Lodge, Day Use Base Facility	18,500
Commercial/Convention	147,500
Larger Hotels	280,000
Lodges	75,000
Condominium Units	1,049,000
Administrative, Service Sta- tion, Maintenance Area	20,500
Club House, Marina, Barns & Stables	28,700

Major recreational facilities in the ultimate development will include:

- skiing - downhill and cross-country,
- swimming - indoors and outdoors,
- tennis,
- squash,
- bowling,
- badminton,
- skating,
- golfing,
- boating and water sports,
- snowmobiling,
- hiking, bicycling, snow shoe and nature trails,
- horseback riding.

The development of the Maple Mountain Village, to its ultimate size, will take place in two stages. Stage 1 is presently anticipated to be completed in 1976. The timing of Stage 2 will be governed by the success of Stage 1, as well as the availability of funds for further development. The extent of the commercial/convention and accommodation space is divided about equally between the two Stages. The location of the Stage 2 components is such as to minimize the disruption and inconvenience to Stage 1 during Stage 2 construction.

The supporting municipal infrastructure is to be of a standard to minimize the impact on the environment and to provide a high level of convenience to the users. Capital cost estimates are provided which identify all work normally undertaken by a community developer. These estimates, expressed in 1973 dollars, are presented as median and high, which represent an average cost and a potential high cost respectively. The difference between these two costs reflects variations that could be expected if extensive rock excavation and dewatering problems are encountered.

	<u>Median</u>	<u>High</u>
Stage 1	\$3,805,000	\$4,790,000
Stage 2	<u>1,070,000</u>	<u>1,280,000</u>
Total, Ultimate Development	<u>\$4,875,000</u>	<u>\$6,070,000</u>

Parking estimates are also provided which identify costs associated with work to be undertaken by the private sector to provide water and sanitary connections, roads and landscaping on the individual blocks. These may be summarized as follows:

- \$1.00 - \$1.25 per square foot for the condominiums outside the village core.
- \$0.25 per square foot of gross floor area in the core for non-public space in the village core.

Other capital cost elements are being estimated by government staff, other members of the Consultants' Team and appropriate utility companies. The more significant of these include the access road by the Ministry of Transportation and Communications, the ski facilities by P.S. Ross & Partners and the recreational, residential and commercial buildings by J. Neilson Management Ltd.

Completion of Stage 1 is tentatively scheduled for 1976. It has been assumed throughout the development of the concept, and in particular, in the preparation of the preliminary capital cost estimates, that an orderly scheduling and logical sequencing of the construction work can be achieved. A key consideration in the timing and costing of the work is the need for a high quality, permanent access to the site.

2

2. INTRODUCTION

The Ministry of Industry and Tourism of the Province of Ontario is currently investigating the feasibility of developing a new, major, all-season recreation area in Northern Ontario. The proposed site is located at Maple Mountain, approximately 30 miles west of Haileybury and the Tri-Town area. The complex is to be designed as a self-contained, fully-serviced community, including residential, recreational, commercial and support facilities for an ultimate user population of close to 6,000 persons. The development will have an important orientation towards downhill skiing and other winter sports, but will also provide a variety of major summer recreational uses. The complex is intended to draw upon the Tri-Town area for a major portion of its work force and for certain institutional services.

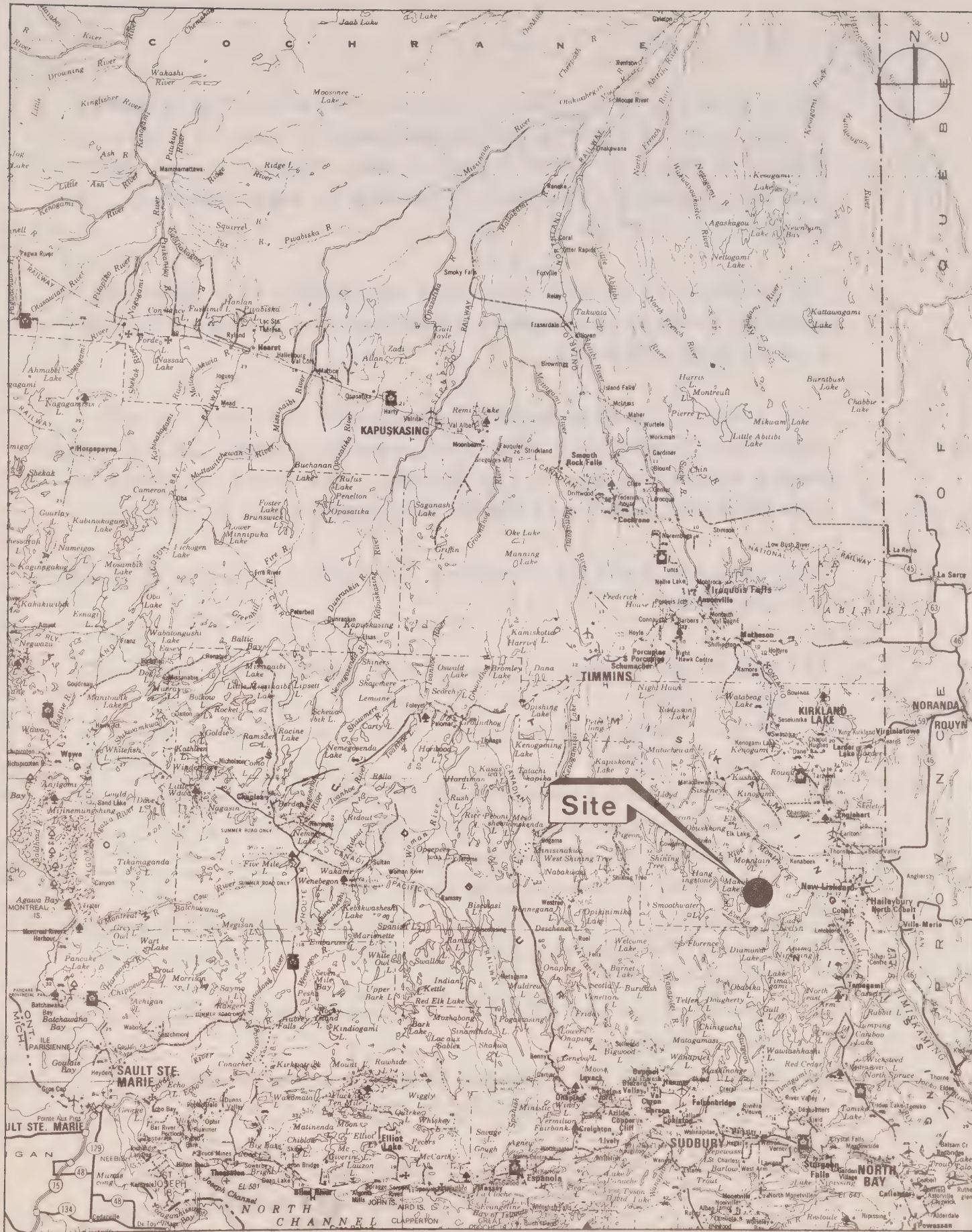
2.1 Scope of Work

To assist the Ministry of Industry and Tourism with the feasibility work, several consultants have undertaken particular assignments:

Market Analysis & Ski Facility Development	P. S. Ross & Partners
Consumer Market Evaluation	Foster Advertising Ltd.
Construction Consultant	J. Neilson Management Ltd.
Land-Use Planning & Engineering	Marshall Macklin Monaghan Ltd.
Economic Analysis	Woods, Gordon & Company

Representatives of these firms have worked closely together on a Consultants' Team with the staff of the Ministry providing the overall co-ordination.

In addition to this work, other Ministries of the Province have participated directly in the various aspects of the work. The Ministry of Transportation and Communications (M.T.C.) has undertaken a preliminary investigation of the road access to the



Location Plan

Maple Mountain site. Their proposal identifies improvements to the existing Highway 558 from Highway 11 westerly approximately 12 miles to Mowat's Landing and construction of an extension, westerly from Mowat's Landing to Maple Mountain, approximately 17 miles.

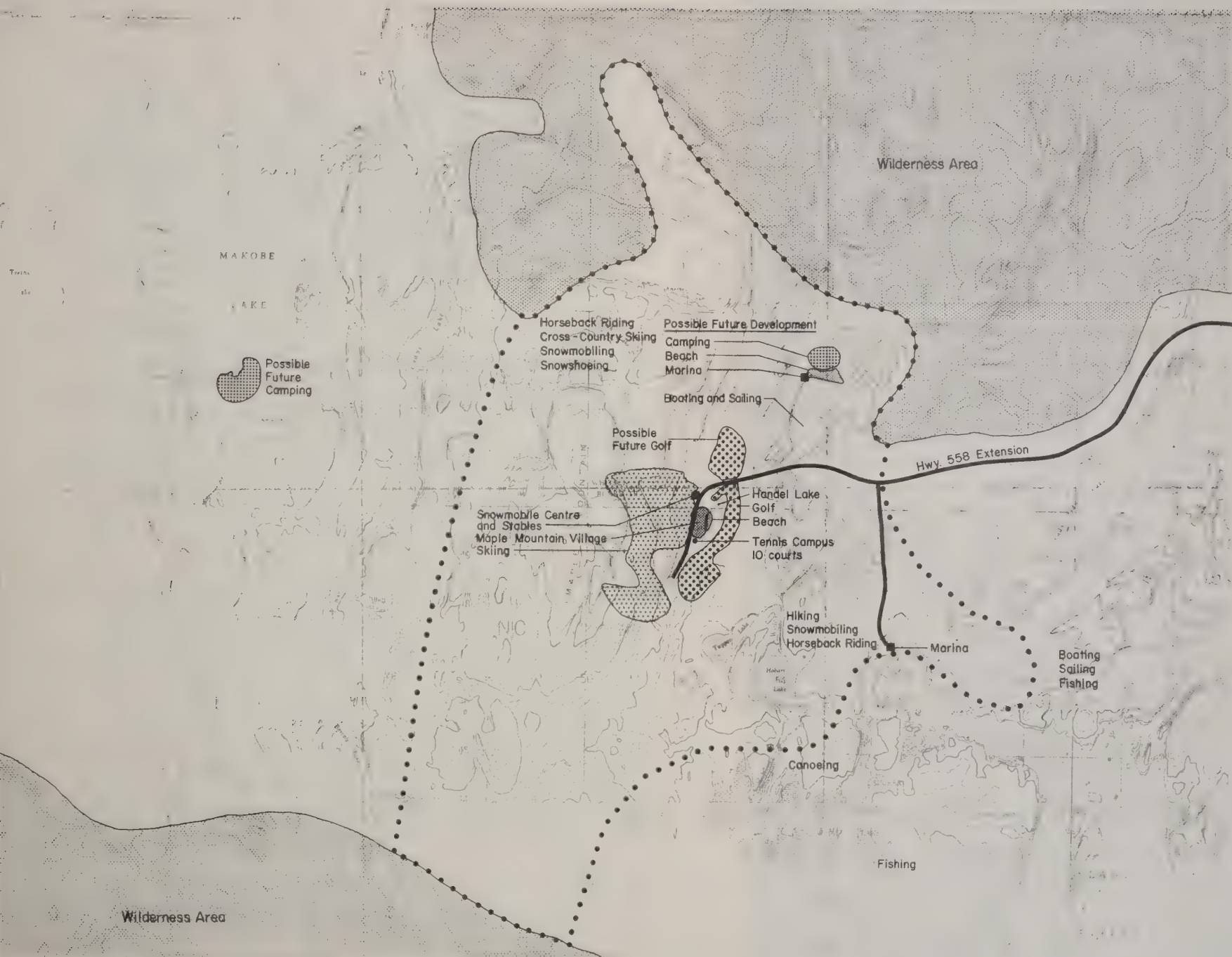
The Ministry of Natural Resources has completed a study which provides general development guidelines for a large area centred on Maple Mountain.

This report, prepared by Marshall Macklin Monaghan Limited, deals specifically with the site plan development and the engineering considerations of the project. The other consultants have prepared reports on their particular areas of interest.

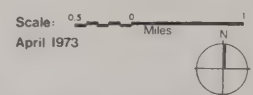
The finalized terms of reference for Marshall Macklin Monaghan Ltd. included:

- a) Evaluation of the site terrain by means of air photo interpretation.
- b) On-site surveys to ascertain the accuracy of the topographic mapping.
- c) Preparation of a master plan for the recreation and support facilities excluding the ski lifts and trails.
- d) Preparation of a detailed village site plan.
- e) Definition of development guidelines.
- f) Preparation of a master plan for the municipal infrastructure.
- g) Preparation of capital cost estimates for the municipal infrastructure.
- h) Assistance to the Ministry in development of a construction schedule.
- i) Assistance to the Ministry in preparation of operating costs for the municipal infrastructure.

The terrain evaluation work was undertaken by Terra Scan Ltd. acting as a sub-consultant to Marshall Macklin Monaghan Ltd.



●●●●● Intensive Commercial and Recreational Development (based on Ministry of Natural Resources draft report of the Maple Mountain Study Area, Jan. 15/73)



Province of Ontario
Ministry of Industry and Tourism

Regional Development

At this time, the primary requirement relates to the financial feasibility of the project, and particularly for Marshall Macklin Monaghan Ltd., to ensure that adequate costs are recognized to provide the appropriate type of development and atmosphere. Accordingly, the village recreational facilities and municipal infrastructure concept as set out in this report is intended to establish an overall framework for development, yet provides flexibility to accommodate modifications during subsequent phases of analysis and design.

2.2 General Development Goals

The character of the community will be unique. It will have an atmosphere and calibre of design equal to the best holiday resorts in Europe or the American Rockies - fully planned in its development, stage by stage, to produce a village community of great variety and interest. There will be maximum scope for individual enterprise and expression by the private developers of the retail core and the residential areas, but within well-defined guidelines and subject to architectural review.

It is intended that a wide range of condominium units will be sold at prices that compare favourably with similar developments in the United States and Europe. The village will provide rental accommodation in a wide variety of facilities ranging from rental condominium units to lodge accommodation and major hotels.

The planning of the Maple Mountain complex gives high priority to protection of the natural environment. The Ministry of Natural Resources (M.N.R.) has provided a detailed analysis of the potentials and capabilities, present land-use patterns, potential conflicts between possible uses of land, and evaluates the impact on the environment.

Based on the study's recommendations, a system of zoning will be used to locate development and recreation activities in areas best suited to supporting these uses. The same system

will ensure that potential conflicts between these different activities do not occur.

The primary emphasis of the M.N.R. study was directed towards determining the extent to which recreational development could be integrated with present and future land-use. The generalized land-use plan identifies opportunities for outdoor recreation, compatible with resource development, in order to provide continuing social and economic benefit to the people of Ontario. It is recommended that the recreation program provide for a wide variety of activities, taking maximum benefit of the use of public lands and waters, while protecting unique or representative features, and to ensure a continuous contribution to the economy of Ontario from tourism and related industries.

Careful consideration has been given to the planning of the village to minimize the cost of capital investment in roads and services.

3

3. TERRAIN EVALUATION

3.1 Extent of the Work

Terrain evaluation of the overall project site has been carried out generally to evaluate the area geology, overlying soil and ground water conditions and as well, to locate potential sources of construction materials. In addition, the existing tree cover has been reviewed. Based on these findings, possible development problems and constraints could be identified and more realistic capital cost estimates prepared.

The work undertaken included an extensive review of available aerial photographs, 1970 Ministry of Natural Resources photography, photo scale 1 inch = 1,320 feet, supplemented by a literature review of available data from previous studies in the area. In addition, a brief site visit was undertaken in February, 1973. Due to the snow cover in the area at the time, only limited refinement of the results could be made. In light of the overall timing relating to the preparation of this report, an additional field check which would normally be done, was not possible. Consequently, the findings must be considered preliminary and must be refined for design purposes. Nevertheless, the terrain evaluation undertaken has provided valuable information to assist in the overall development of the land-use and municipal infrastructure concept as well as the preparation of the capital cost estimates.



3.2 Soil and Rock Types

Soil deposits within the study area do not seem to be very deep over rock, except in the area designated "Sands, Silts and Clays" where depths may be deeper, (say over 10 feet deep) and within the esker* where they may reach 30 feet to 50 feet in depth.



* esker - a long narrow ridge of sand, gravel and boulders.

Original data by: Terra Scan Limited





Outcrop

-  Precambrian sandstone
-  Precambrian diabase




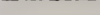
Shallow Rock


-  Bedrock close, steep slopes
-  Bedrock close, moderate slopes

Soil

-  Bouldery till over bedrock
-  Well drained sands and stony soils
-  Esker
-  Sands, silts, clays

Drainage

-  Swamps
-  Wetlands
-  Lakes
-  Drainage courses

Scale: 800' 0 800'
April 1973 

Province of Ontario
Ministry of Industry and Tourism

General Surface Geology

Preliminary Findings

Soil deposits appear to have a significant amount of stones, cobbles and boulders and likely have a sandy matrix. Within the area of the proposed village, rock can be close to surface and some boulders, up to and over a cubic yard in size are to be expected. Excavations are expected to be difficult due to the stony nature of the soils and the likelihood of bedrock within 10 feet of surface. Up to 70 per cent of the service excavations would be expected to encounter bedrock and/or very cobbly soils.

The bedrock outcrops on the ski slope zones are likely very hard sandstone, and the sandstone layers will dip back into the hill towards the west. In the areas designated "Bedrock Close, Steep Slopes", rock is expected to be very close to the surface, and stones and boulders will be common. Excavation into rock would require blasting.

The area designated "Bedrock Close, Moderate Slopes", directly west and uphill from the proposed village site, appears to have somewhat deeper soils over rock, and there may be ground water seeping through these overburden soils.

Rockfill should be used to fill in the pond west of Handel Lake, within the proposed village site. At present, this is a semi-stagnant lake, bounded by organic materials of indeterminate depths. Organic material should be excavated and then backfilled where structures are to be placed over this pond. Where structures are not to be placed, then placement of fill by end dumping should be undertaken. Displacement to the organic materials is likely but some settlement should be expected.

3.3 Construction Materials

An apparent source of granular materials for construction is the esker which borders the east shore of Handel Lake and extends to just west of Tupper Lake. Materials within this ridge should be granular in texture. A second source of gran-

ular materials, possibly poorer in quality, might be the area of well-drained sands and stony soils, northeast of Handel Lake. However, due to the proximity of the esker to the village and golf course, this source is not recommended. Investigation by M.T.C. will also identify suitable sources of granular materials which would be available for Maple Mountain.

Some pockets of poor grade granular might be located in the bouldery till areas.

Excavated bedrock could be used as swamp backfill.

3.4 Drainage and Ground Water Conditions

It is suspected that water from Handel Lake may be seeping out under the esker to the low, flat area east of Handel Lake, in the vicinity of the proposed golf course. A high, possibly perched, ground water table is expected within the area designated "Sands, Silts and Clays".

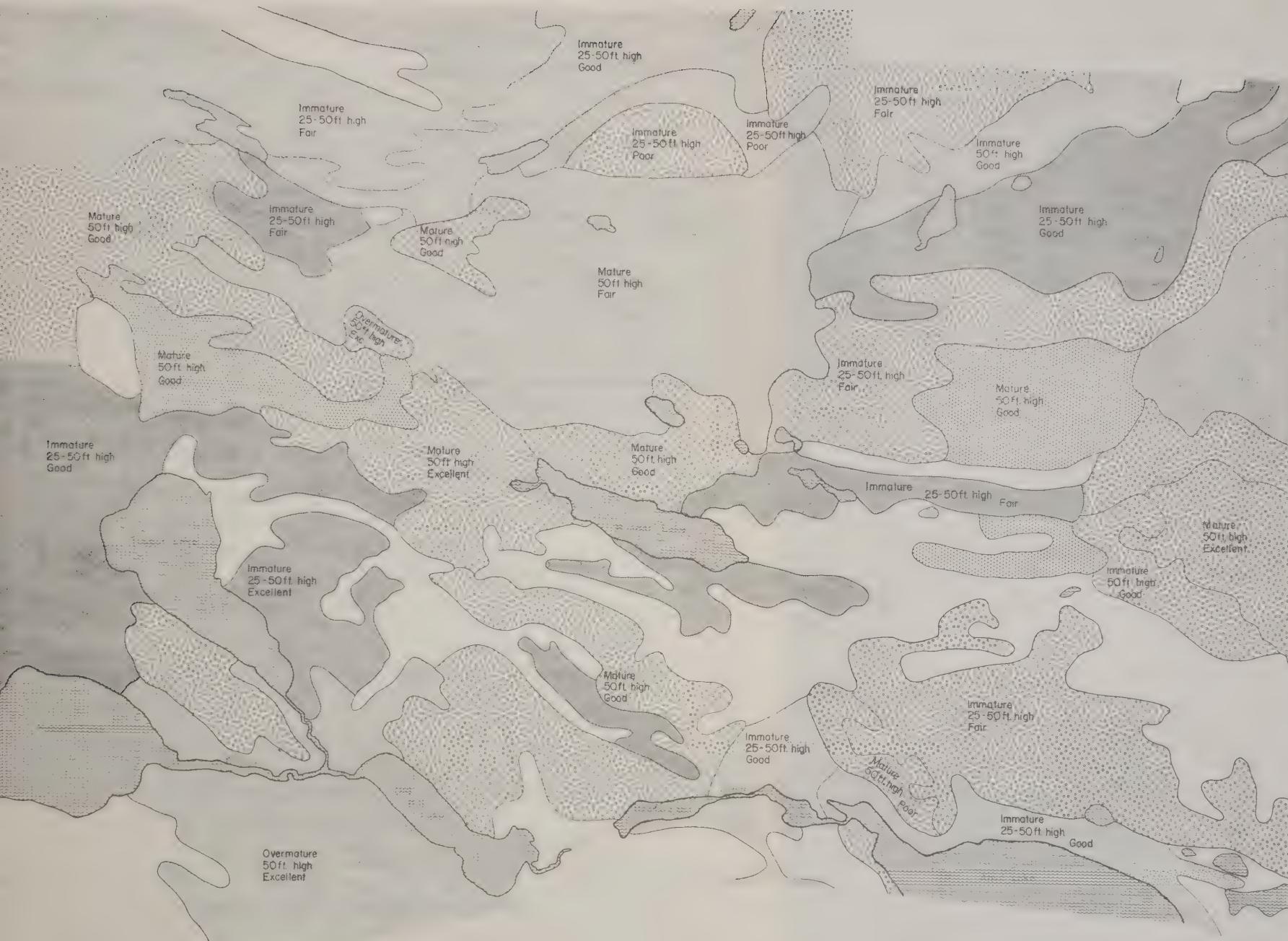
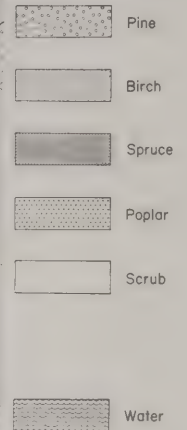
West of Handel Lake, in the area of the proposed village site, surface drainage courses are evident. However, here again it is expected that some sub-surface waters might have to be dealt with, and possibly cut off when developing the village. The existing series of ponds might be partially spring-fed.

The soils and rocks are likely fairly porous, and hence most water will seep into the ground, and make its way to the Lake or to the low, flat, wet, sand areas east of Handel Lake, just above the rock surface or through fractures within the rock.

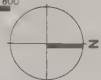
While it was not possible to determine the probability of ground water sources for domestic and commercial uses, the existence of a large aquifer for a suitable well source does not appear to be likely.

Original data by: Terra Scan Limited

Dominant species only



Scale:  800' 0 800'
April 1973



Province of Ontario
Ministry of Industry and Tourism

Tree Cover

3.5 Tree Cover

In the area of the proposed ski slopes, the major species is white birch, mixed with jackpine and white pine. The trees are judged to be 50 feet to 65 feet tall, and are generally mature. The stand is in fair condition and has a density of trees of about 70 per cent.

Within the proposed village site, the dominant species is jackpine, mixed with white pine and some white birch. The trees are mature, 50 feet to 65 feet high, with a stand density of about 80 per cent. The stand is judged as good, and the dominant pines should be preserved to enhance the beauty of the village.

At the proposed golf course, there are areas of either scrub bush or dominant black spruce species. White birch is secondary, and some cedars were noted. The stand, although judged as immature with trees 25 feet to 50 feet tall with an 80 per cent density, is rated as good.

3.6 Soils Group Characteristics

With specific reference to the general surface geology, following are more detailed, typical characteristics of the identified geological areas:

Precambrian Sandstone - bedrock at or very close to the surface. The rock is layered and likely very hard and competent. Rock layers dip back to the west. Generally the terrain is rugged and steep cliffs are common.

Precambrian Diabase - bedrock at or very close to the surface. The rock is massive, and likely to be very hard and competent. The terrain is generally rugged and cliffs are common.

Bedrock Close, Steep Slopes - bouldery sand till, with depths

likely less than 5 feet over bedrock. On the slopes, the soil is very well-drained and the tree cover is dense. Rock outcrops are common.

Bedrock Close, Moderate Slopes - stony and bouldery till with probable depths of 3 feet to 7 feet over bedrock. Internal drainage is good to imperfect, but underground springs are probable.

Bouldery Till Over Bedrock - stony and bouldery, sandy till over sandstone bedrock to depths of 3 feet to 10 feet. Drainage is moderate to good. The surface topography is hummocky in appearance. Few foundation problems are expected.

Well-Drained Sands and Stony Soils - flat to undulating terrain, likely underlain by sandy and granular soils. The soil is well-drained and few development problems would be expected. The potential for construction materials is only moderate.

Esker - a 30 foot to 50 foot high ridge, probably a stony, sandy soil. The soil is extremely well-drained and has good potential as a source of construction materials although its use is not recommended.

Sands, Silts and Clays - likely deeper deposits of horizontally layered sands and silts. The terrain surface is flat. Ground water level likely high and close to the ground surface and may require control during trench excavation.

Swamps - water table at or above the ground surface all year. A variable thickness of compressible organic material is present. These areas must be considered as potentially difficult to develop.

Wetlands - water table seasonably close to the surface with impeded internal drainage. The areas present poor engineering soils requiring special drainage precautions.

4

4. ON-SITE SURVEY

Topographic mapping, at a scale of 1 inch = 200 feet with 5 foot contours, was prepared by Western Photogrammetry Limited in 1972 from 1 inch = 1,320 foot aerial photography flown in 1970. The horizontal and vertical control for the mapping was obtained from the 1:50,000 provisional map of the Government of Canada.

In order to determine the accuracy of the mapping, an on-site verification survey was undertaken in mid-February, 1973, to establish relative differences in vertical and horizontal distances between identifiable points in the area of the proposed ski slopes and the village site. At the same time, information on snow depths and water depths was gathered.

4.1 Horizontal and Vertical Distance Measurements

Horizontal and vertical distances were measured between a point at the top of Maple Mountain adjacent to the fire tower and points on the shore of Tupper Lake, Old Bill Lake, Handel Lake, and Anvil Lake. The following table sets out the measured distances, the scaled distances from the drawing and the percentage variation between the two distances.

<u>Location</u>	<u>HORIZONTAL DISTANCE</u>			<u>VERTICAL DISTANCE</u>		
	<u>Measured</u>	<u>Scaled</u>	<u>Vari- ation</u>	<u>Measured</u>	<u>Scaled</u>	<u>Vari- ation</u>
From the top of Maple Mountain to:	ft.	ft.	%	ft.	ft.	%
Tupper Lake	9,640	9,600	+ 0.4	1,153	1,120	+ 2.9
Old Bill Lake	14,900	14,700	+ 1.3	1,160	1,145	+ 1.3
Handel Lake (south end)	7,840	7,720	+ 1.5	1,093	1,060	+ 3.0
Handel Lake (north end)	10,820	10,760	+ 0.5	1,083	1,051	+ 2.6
Anvil Lake	17,540	17,360	+ 1.0	1,099	1,082	+ 1.6
Small Lake (southeast of Fire Tower)	2,900	2,900	0.0	565	555	+ 1.8

NOTE: Vertical Distances to ice level except to island at the north end of Handel Lake.

These results indicate a reasonable degree of accuracy for the mapping. Based on the on-site survey work, and the fact that no major discrepancies were found, it was concluded that the mapping is of adequate accuracy for planning purposes.

With the proposed location of the village site and ski runs, the relative accuracy of the mapping in the area west and northwest of Handel Lake was of particular interest. However, due to the fact that an intervisible point at the top of the ski runs was not accessible by helicopter, relative horizontal and vertical distances could not be measured in this area. To provide information in the area of the village site, a ground line profile was taken from a point on Handel Lake, northwesterly up the slope between the two small ponds. The general similarity of the ground line from the field survey and that developed from the contour drawing is evident, although there is a basic difference of 10 to 20 feet vertically.

The verification work as outlined herein indicated that the

1 inch = 200 feet topographic mapping is of adequate accuracy for planning purposes. However, before detailed design work can commence, more accurate data is required. This may be obtained from the existing photography based on a detailed horizontal and vertical control net or from additional on-site field work. It is expected that a combination of the two would be most appropriate.

4.2 Snow Depths

Between February 15 and 18, 1973, at the time of the field survey, snow depths measured along the line of the profile westerly from Handel Lake were made. These indicate that the snow cover varied between 1.5 and 2.2 feet in this area.

4.3 Water Depths

Water depth measurements were made through the ice in several of the lakes in the area. Approximately one foot of soft material over the solid bottom was found at each measurement location. The following summarizes the soundings to solid bottom.

<u>Location</u>	<u>Depth (ft.)</u>
Anvil Lake (south end)	
a) 170' off shore	23
b) 280' off shore	27
Handel Lake	
a) north	15
b) central	19
c) south	21
Small north pond west of:	
Handel Lake	2
Small south pond west of:	
Handel Lake	6

5

5. SITE PLAN DEVELOPMENT

This section describes the village plan and its components, the activity areas related to the village, and records the design process and philosophy which led to the final plan for the total development.

5.1 Site of the Village

The proposed site of the Maple Mountain Village is fixed to a great degree by the location of the ski trails and the lake, in order to provide the necessary proximity to both winter and summer recreational activities. The proposed site meets both these requirements, has suitable topography and does not incur unreasonable engineering constraints.

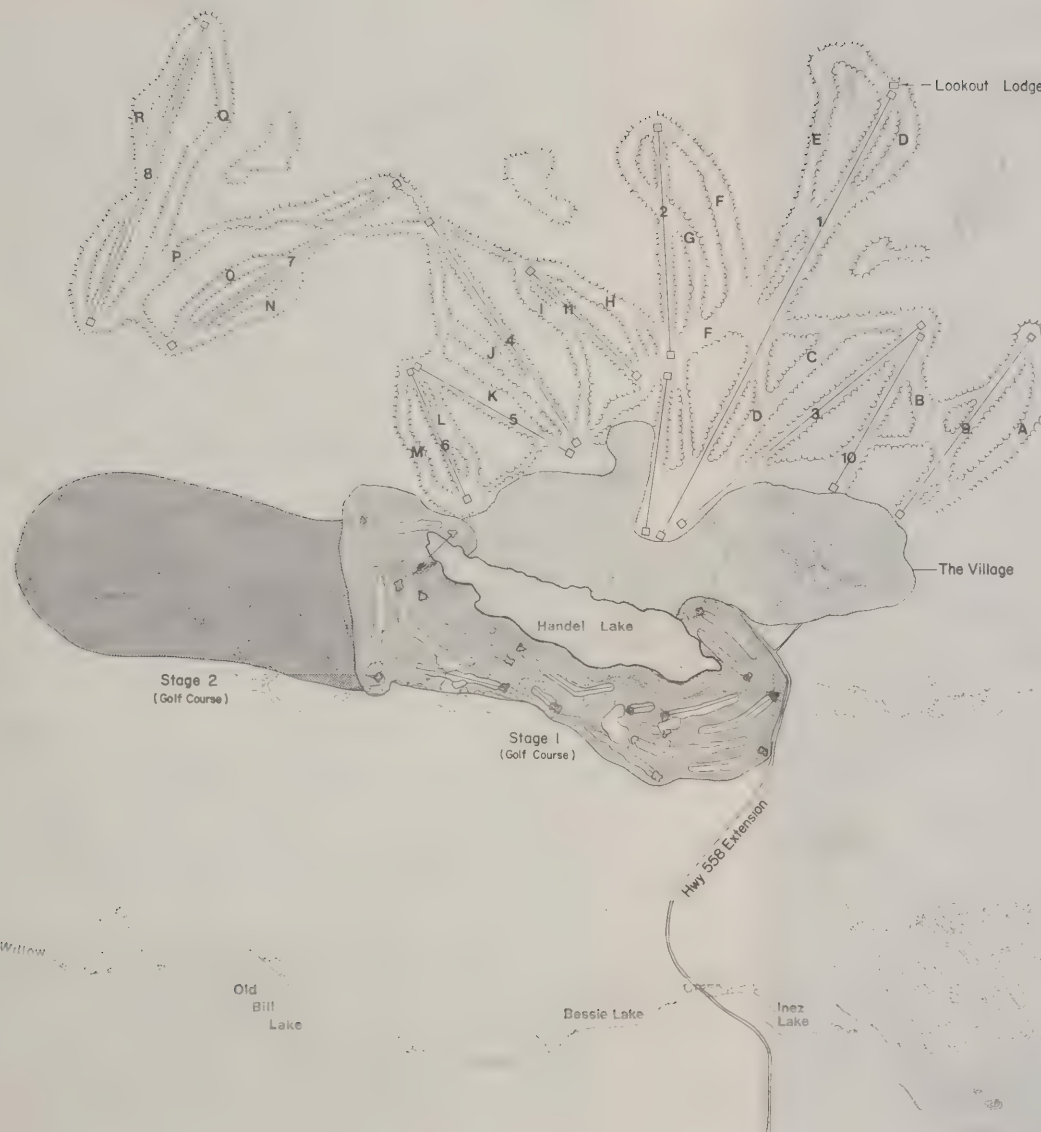
The site is on the west side of Handel Lake, a small lake 4,000 feet long and 700 feet wide at the foot of the east slope of Maple Mountain. The village core of 20 acres is at the base of two major ski lines in the centre of the planned ski run system. An area of 250 acres on the west side and around the top of Handel Lake had been identified as being suitable for the site of the village. The location chosen for the village core provides the best interface with both the ski facility and the potential water-based summer recreational activities.

Handel Lake is a visually attractive location and is suitable for small sail boats, pedal craft, canoeing and swimming. Other water-oriented activities, such as power boating, can be accommodated on Lady Evelyn Lake, which is part of a very extensive lake and river system. A scheme was proposed which would have impounded water and created a new, major body of water incorporating the existing Tupper, Old Bill and Anvil Lakes with a water level at elevation 1000. This would have resulted in a much larger body of water, but still some 2,500 feet from the proposed village site. A less ambitious scheme,

Original Ski Layout by: P.S. Ross
and Partners.

Stage 1 Development:
Lifts - 1, 2, 3, 4, 6, 9, 10 & 11
Trails - A, B, C, D, E, F, G, H, I, J, K, L & M

Stage 2 Development:
Lifts - 5, 7 & 8
Trails - N, O, P, Q & R



Scale: 800' 0 800'
April 1973 

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Ski Facilities**
Ultimate Development

to join only Tupper and Old Bill Lakes with a water level at elevation 980 was also considered. Because of the very high cost of these schemes, the shallowness of much of the lake system which would be created, the potential impact on the environment, and the fact that neither scheme creates a large body of water adjacent to the village, these proposals have not been pursued.

The physiography of the site is suitable. The slope is generally 5 to 10 per cent in the village core area and 5 to 20 per cent in the condominium areas. The topography tends to be hummocky, underlain by bouldery and granular soils. Soil cover is generally shallow throughout most of the village site. Some improvement is expected to be required along part of the Handel Lake frontage, which tends to wet and swampy conditions. Two water courses draining the east slopes of the mountain empty into two small perched lakes west of the village core and continue into Handel Lake through the area of the village core. In addition, there is a relatively high water table through the area. Both of these physiographic conditions have been taken into account in the design of the village.

The village site is presently covered by a mature stand of trees primarily jackpine. This type of tree generally does better in dry soil conditions, and a lowering of the water table which might result from construction should not adversely affect it.

5.2 Design Objectives

Ten major design objectives were identified for the planning of the Maple Mountain complex. Achievement of these ob-

jectives will implement the more general development goals previously stated.

As the scheme developed, it became possible to elaborate on these generalized development goals as more specific design objectives. Some of the other consultants' studies, such as the Master Plan for the ski runs, were largely complete before the planning studies commenced and formed an important starting point. A process of examining alternative plans and of finding a development scheme occurred as more data became available from concurrent studies in marketing and engineering.

5.2.1 Maple Mountain Village will provide a wide variety of both winter and summer recreational activities within walking distance of the village core. The village has been located so that two of the major ski lifts terminate at the core area. The initial market survey indicates the importance of integrating summer activity into the village. A major portion of all families indicating an interest in the Maple Mountain complex said that visits would be made during the summer. It will be possible to locate the following major summer recreational activities within walking distance to the village; hiking, riding, tennis, golfing, canoeing and sailing (very small craft only), and swimming.

5.2.2 Maple Mountain will have the atmosphere and quality of design perhaps best exemplified by the first phase of the winter resort at Vail, Colorado. This is not to say that the village will imitate Vail's architectural character, which is best described as American Tyrolean. Vail is probably the most attractive of the ski resorts in the American Rockies because of the compactness and diversity of the small buildings which comprise the core area. The diversity, however, is within the limits of established architectural theme. The net effect is to give the visitor a satisfying aesthetic experience.

In essence, the community design of Maple Mountain has been aimed at achieving sensitive spatial arrangements with en-

closed vistas and pedestrian-oriented squares and streets. Wherever possible sidewalks and unnecessary building setbacks are avoided in order to achieve an intimacy expressive of the most exciting European and American resort communities.

- 5.2.3 All points in the village will be within a 10-minute walk of the village core. The entire complex will be oriented to the pedestrian both within the village core and in the interconnections between the core and the condominium areas and recreational facilities. In addition, ski pathways will link those sections of the condominiums where topography permits skiers to ski to the base of the lift lines.

The decision to adopt a compact form of design for the village came after the examination of a number of alternative schemes which embodied different criteria. This included the following:

Alternative A - This concept called for a linear, low density village, running most of the full length of the west side of Handel Lake. The condominium areas were dispersed with fingers of green space separating them. The units were clustered in short cul-de-sacs running at right angles to two parallel collector roads which lead to the centre of the village. Hotel accommodation was concentrated in a U-shape around the base of the main chair-lift. This alternative had the advantages of being well-served by car or transit, and the village was well-oriented to both the lake and ski facility. The disadvantages were that it was spread out, thus limiting easy pedestrian access from the core to the condominiums and the condominiums were not well-situated with respect to the ski facilities.

Alternative B - This concept was linear in nature but at a higher density than Alternative A, with rental accommodation oriented to the lake. The spine road running

parallel to the west shore of the lake separated the ski tows and the village core, which was located on the lake. This linear design can be well-served by car or transit but has the disadvantages of placing many condominiums too far from the village for easy pedestrian access. In addition, the village core was not ski-oriented.

Alternative C - The third concept was basically radial in design and much more compact than the first alternative. Hotel accommodation was located at the edge of the village at the end of the short collector roads which ran through the condominium areas and converged on the village core. The village core was located between the lake and the bottom of the gondola. This village would also be easily served by car and would provide good pedestrian access. The rental accommodation was entirely oriented to the ski operation. To its disadvantage, the village centre would be cut up by the collector roads radiating from it, and the rental accommodation would be too far removed from the village core. More so than the previous alternative, the village core would be water-oriented.

Alternative D - This concept centred the village core on a major marina on the lake. The basin for the marina would be extended by excavation closer to the base area for skiing. The commercial facilities in the core were located on either side of the marina. Hotels, located close to the lake and condominium units, were concentrated north and south of the gondola. This alternative placed the condominiums within easy pedestrian reach of the village. However, it over-emphasized the marina as a possible focus for the village core at the expense of skiing. Only a small part of the rental accommodation was ski-oriented.

After consideration of these alternatives, a Conceptual Plan, incorporating the best of each of the alternatives was developed. This plan was revised and refined several times as add-

itional data became available, and as further research was undertaken. These Conceptual Plans were all based on the desire to achieve a maximum 10-minute walking time between the core and other components of the village.

- 5.2.4 It follows from this pedestrian orientation of the village that parking and vehicular access to the village core will be strictly controlled. The only long-term parking to be provided within the core area is for users and for some store owners. Short-term parking will be permitted at several pick-up and drop-off locations. Parking for staff and owners of condominiums in the village core will be provided in parking lots on the periphery of the village core. Day-use skiers will use remote parking areas.

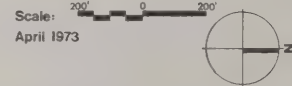
The public space within the village core will be generally no wider than 40 feet from building to building and will be primarily for pedestrian use and underground utilities. The number of access points from the peripheral roads to the village street system will be limited.

The village core will be bounded on both east and west sides by roads. Both of these roads will be so constructed as to facilitate their being closed off as the major access during at least one season of the year. The westerly road will be closed during the winter season to allow direct skier access from the hills to the village core without conflict with the automobile. During the summer season, this road will be opened and the easterly road, running near the lake, will be closed in part to make a pedestrian mall. This arrangement permits unimpeded pedestrian access from the village core to the main centre of recreational activities, during both summer and winter seasons.

- 5.2.5 The Maple Mountain Village will provide a full range of restaurants, retail and service facilities, and rental accommodation. While a cafeteria will be provided in the base lodge,

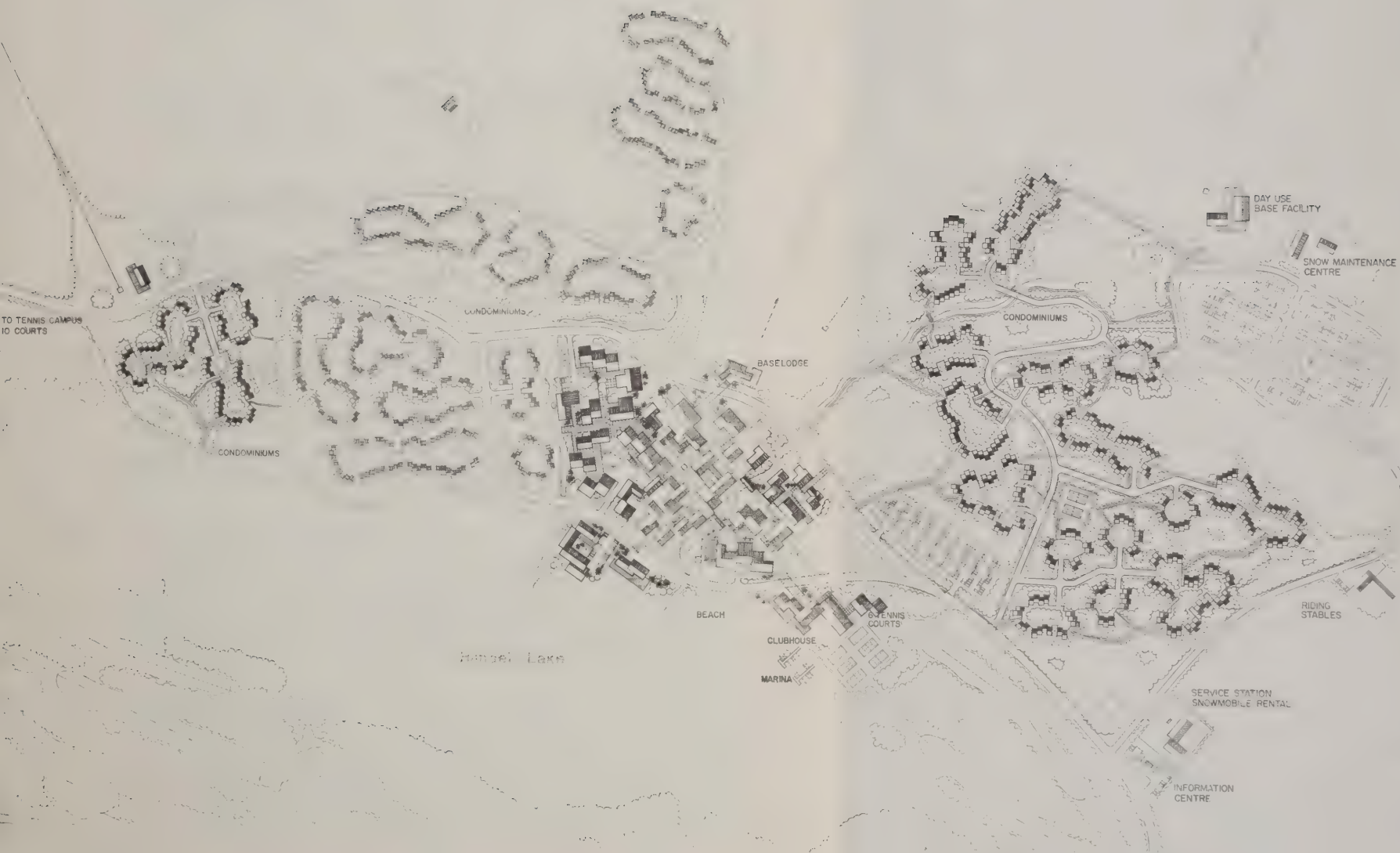
there will be a variety of small restaurants in the village core, all within walking distance of the ski runs. It is felt that this approach will permit a great deal of diversity, not only in the physical appearance of the core area (many smaller buildings, rather than a single large base lodge structure) but it will provide greater diversity of eating fare. This is particularly important for long-term visitors to the complex. Similarly, hotel accommodation will not all be provided in one large hotel but will spread among a number of smaller hotels and a significant number of small lodges, many of which would be operated in conjunction with restaurants.

- 5.2.6 Detailed urban design and architectural criteria will be specified in order to control height, density, coverage, architectural design and character, colour, building materials, setbacks and landscaping of buildings in the village core.
- 5.2.7 The design features of the condominiums will also be controlled. One of the failings of many existing resorts is that the residential areas surrounding the village core are at such low density that they are for all practical purposes inaccessible by foot. In order to maintain this pedestrian orientation and to extend the intimate character of the village core into the residential areas, condominiums located outside the village core will be at a relatively high density of approximately 10 units/acre. Even at this density it will be possible to retain much of the natural vegetation and existing natural features. Access roads will be designed without sidewalks or curbs. Drainage will be carried away by swales along the sides of the road. Parking will be available within the condominium area, carefully laid out and screened by trees and natural features.
- 5.2.8 The off-site recreational activity areas will be readily accessible to the village.
- 5.2.9 The minimizing of capital cost has been reflected in many of



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Site Plan
Stage 1



the decisions about design to ensure reasonable development costs in light of high costs for underground services in rock. The compactness of the village core and the condominium area will contribute to lower per unit cost for the municipal services.

- 5.2.10 The village core and residential neighbourhoods will be planned in a manner which will facilitate efficient and convenient staging of buildings and services.

5.3 Effect of Design Objectives as Constraints on the Size of the Village Core

Maple Mountain Village has been designed to ultimately accommodate approximately 6,000 users. At this time, no provision for staff accommodation, as separate from user accommodation, has been made. The core area covers approximately 20 acres and the condominiums an additional 90 acres.

This section deals with the process by which the design objectives were translated into a maximum population and spatial limits for the village development. The following factors were directly relevant in setting these limits.

- 5.3.1 Capacity of the Ski Hill - The initial estimate of the optimum capacity of the ski facilities based on the proposed ski hill layout is approximately 4,600 skiers at one time. Assuming a bed (person)/skier ratio for major resorts of 100/80, it was estimated that a village size in balance with the ski facilities would contain approximately 6,000 beds (excluding staff).
- 5.3.2 Suitability of Terrain - The terrain evaluation has identified the strip of land approximately 1000 feet wide running the full length of the west side of Handel Lake as being suitable for the village development. It is expected that there will be a reasonable depth of soil covering in this area. The slope is also suitable, from 5 per cent to 20 per cent.

- 5.3.3 Pedestrian Accessibility - Taken in conjunction with the physiographic constraints, a 2,500 foot radius representing about a 10-minute walking time measured from the centre of the village core near the lake, fairly well circumscribes the optimum limits for the village.
- 5.3.4 The density of development in the village core and the condominium areas significantly affects the population which could be accommodated within this limit. As mentioned before, condominiums outside the core will be constructed at approximately 10 units/acre. A significant number of condominiums will be located in the village core. The village core will be developed at a maximum density of 0.7 times gross coverage.
- 5.3.5 The method of solving the car storage problem significantly affects these density factors and the total area available for other land-uses. Only limited parking will be available in the village core, with some additional parking on the periphery of the core; other major parking at some distance from the core and outside the 10-minute walking radius.
- 5.3.6 Although not directly calculated, the overall capital costs and resulting per unit share of these costs was kept in mind at all times.

The total size of the village core was estimated on the basis of preliminary retail and restaurant space requirements established by P.S. Ross & Partners and Woods, Gordon & Co. and modified for a population of approximately 6,000. It was estimated that approximately 170 condominium units could be accommodated within the village core itself. This was determined by taking the total ground floor space requirements for retail and restaurant facilities, estimating the second floor space requirements of all lodge accommodation and some offices, and assuming that all of these buildings (except the food store and theatre) would average three storeys with the balance of the second storeys and all of the third storeys

used for condominium space.

By adding the ground floor areas required for the base lodge, hotels, theatre, golf club house, marina, administrative offices, and other facilities, as well as roads and parking areas, it was possible to estimate that the village core would occupy approximately 20 acres. At 8.6 to 10.5 units per acre, the balance of 830 condominium units would occupy approximately 90 acres. Together with recreational facilities and parking areas, these land-uses comfortably fill the area circumscribed by the 10-minute walking limit.

(Reference can be made to the Schedule of Accommodation in the following section for detailed data used in this calculation.)

5.4 Village Core Components

The village core must accommodate a number of diverse functions. It must provide eating facilities for both the day-visitor and the long-term vacationer, rental accommodation at a variety of prices for both the family and the hosteler, a full range of retail outlets selling everything from après-ski wear to beer, service functions such as a post-office and dry cleaners, movies and convention space, and facilities for a health spa and summer recreational activities.

The administrative staff would be headquartered here and certain essential services such as fire-hall would be located inside the core. There will be approximately 170 condominium units in the village core. The "base lodge" includes in its facilities a 250-seat cafeteria which doubles as a convention/banquet hall, headquarters for the ski school, ticket office, ski patrol and first aid.

The base lodge is located on the west side of the village core with the west view to the ski run-out area and Maple Mountain.



There will be a number of larger hotels, each with a restaurant, with an ultimate total of 700 rooms. In addition, 300 rooms will be located in a number of small lodge-type facilities, situated on the upper levels and operated in conjunction with the restaurants. The following table sets out the staging programme for the hotels and lodges.

	STAGE 1			STAGE 2			ULTIMATE DEVELOPMENT		
	Units	Sq. Footage	Pop'n	Units	Sq. Footage	Pop'n	Units	Sq. Footage	Pop'n
Hotels	200	80,000	400	500	200,000	1,000	700	280,000	1,400
Lodges	100	25,000	200	200	50,000	400	300	75,000	600
Total	300	105,000	600	700	250,000	1,400	1,000	355,000	2,000

The golf club house and marina building on Handel Lake will be one of the focal points of the whole project. It will include in its facilities a nursery and day-care facility with access to the Handel Lake Beach. A health spa and 25-metre swimming pool will be planned as part of this complex. The pool will be enclosed but related to the outdoors. There will be an air structure enclosing the four tennis courts.

The administrative offices will be located in the second storey of a combined fire-hall, ambulance service and administrative building at the north end of the village core.

The village core will be built in two stages of approximately equal size. Stage 1 will consist of the central area. It can serve as an attractive and efficient village core, complete in itself, until Stage 2 is constructed at a later date.

Stage 1 is planned within the framework of three important visual nodes and magnets for visitors, which are:

- the base lodge and ski slopes,
- the club house, marine and hotel grouping oriented toward Handel Lake, and
- a seasonal hotel oriented toward Handel Lake.

Between these focal points are pedestrian spaces, malls and plazas on which are located retail stores, restaurants, an administrative building, a fire-hall and upper level lodges and condominiums. Stage 1 incorporates approximately 280,000 square feet of building space in the core.

Stage 2 is planned as an orderly expansion of the core to the south, east and north. It will add a fourth node, a hotel in the south corner, and will reinforce the rental accommodation area on the lake by the addition of two more hotels. The main expansion of the core will be to the south, linking the Stage 1 core area with the Stage 1 residential area.

Stage 2 will incorporate approximately 400,000 square feet of building in the village core. Stage 2 has two-and-a-half-times the hotel and lodge accommodation of Stage 1. The ultimate coverage in the village core, expressed as the percentage of ground floor area to the total core area, is approximately 30%.

A comprehensive schedule of all village core facilities, including staging, follows:

SCHEDULE OF FACILITIES IN THE VILLAGE CORE

	<u>Stage 1</u>	<u>Stage 2</u>	<u>Total Sq.Ft.</u>	<u>Comments</u>
<u>Recreation</u>				
Pool	7,100	---	7,100	25-metre, enclosed with wading pool.
Health Spa	2,300	---	2,300	To be part of pool area.
Tennis Courts	62,550 (12 courts)	62,550 (12 courts)	125,100 (24 courts)	4 courts in an air structure. 10-court campus at the south limit of village.
Squash Courts	4,500 (2 courts)	1,200 (2 courts)	5,700 (4 courts)	In Health Spa/Pool area.
Skating Rink	---	---	---	Natural, on Handel Lake.

	<u>Stage 1</u>	<u>Stage 2</u>	<u>Total Sq.Ft.</u>	<u>Comments</u>
<u>Recreation (Continued)</u>				
5 Pin Bowling	---	6,200	6,200	6 lanes, possibly in a basement area.
Golf Club House & Marina	10,000	---	10,000	Includes 3700 sq. ft. for restaurant/bars and 1000 sq. ft. for Pro Shop.
Nursery/Day-care Centre	1,000	---	1,000	Located at Golf Club House with access to lake and skating.
Gondola Terminal	2,000	---	2,000	Located in Base Lodge.
<u>Commercial/Convention</u>				
Ticket Office	120	---	120	Located in Base Lodge. There will be a number of smaller ticket offices in scattered locations.
Snack Bar	1,000	---	1,000	
Restaurants/ Bars (excluding Base Lodge)	10,500	25,000	35,500	
Cafeteria - 250 Seats	5,000	---	5,000	Located in Base Lodge.
Theatre for 300	5,000	---	5,000	Also planned as Convention Space.
Sports Shop/ Ski Rental	1,000	---	1,000	Located in Base Lodge.
Sporting Goods/ Ski Shops	3,000	7,000	10,000	
Men's & Ladies Wear	4,000	4,000	8,000	
Food & Drug	28,500	23,000	51,500	Includes food, drug, hdwe., liquor, beer, delicatessen, bakery.
Services	11,500	6,500	18,000	Includes bank, post office, barber, beauty salon, cleaners, laundromat.

	<u>Stage 1</u>	<u>Stage 2</u>	<u>Total Sq.Ft.</u>	<u>Comments</u>
<u>Commercial/Convention</u> (Continued)				
Ski Patrol, First Aid Clinic	300	---	300	Located in Base Lodge.
Ski School	120	---	120	Located in Base Lodge.
Ancillary Spaces	2,250	---	2,250	Located in Base Lodge.
Medical/ Dental Offices	1,000	---	1,000	
Miscellaneous (Stage 1 and 2)	4,000	3,000	7,000	Includes candy, gifts, camera, tobacco, china.
Miscellaneous (Stage 2 only)	---	12,000	12,000	Includes child- ren's wear, shoes, yard goods, jewellery, music, variety, hobby.
<u>Administrative</u>				
Administra- tive Offices	1,500	---	1,500	
Police	1,000	---	1,000	
Ambulance Fac.	1,000	---	1,000	
Firehall	3,000	---	3,000	
Corporation	4,500	---	4,500	Includes 1000 sq. ft. for an Inform- ation Centre.
<u>Housing</u>				
Larger Hotels	80,000 (200 rooms)	200,000 (500 rooms)	280,000	
Lodges (2nd Fl.)	25,000 (100 rooms)	50,000 (200 rooms)	75,000	
Condominiums	63,000 (78 units over com- mercial space)	74,000 (93 units over com- mercial space)	137,000	

SUMMARY OF CORE FACILITIES

	(square feet)		Ultimate
	<u>Stage 1</u>	<u>Stage 2</u>	<u>Development</u>
1. Base Lodge	11,000	---	11,000
2. Commercial (1st Floor)	67,500	80,000	147,500
3. Administrative	11,000	---	11,000
4. Club House, Marina	25,000	1,200	26,200
5. Larger Hotels	80,000	200,000	280,000
6. Lodges (over commercial)	25,000	50,000	75,000
7. Medical/Dental (over commercial)	1,000	---	1,000
8. Condominiums	63,000	74,000	137,000

The objective to develop a visually pleasing, pedestrian-oriented village is partially achieved through a carefully controlled parking supply.

5.5 Parking

In the residential areas outside the village core, at the day-use parking areas and at the marina on Lady Evelyn Lake, parking will be supplied for the auto-oriented visitors.

However, within the village, core, parking will be severely limited. Satisfactory accessibility to the core is achieved by:

- a) a minimum parking supply within the core,
- b) large parking areas outside, but within an easy walking distance of the village core,
- c) a significant number of hotel and core condominium guests and employees using public transit,
- d) the well-developed pedestrian walkway system for residents of the outer condominium areas.
- d) the provision for pick-up and drop-off areas for both peo-

ple and goods.

Including parking areas adjacent to the village core, about 700 spaces will be supplied, only about 2/3 of the total number of parking spaces usually available for a community of this size.

Within the core, long-term parking will be available only to a limited number of hotel guests, a limited number of administrative and other employees and service vehicles. Some short-term parking (less than 15 minutes) will be provided for condominium users in the core and shoppers to pick-up or drop-off parcels.

The following table identifies activities requiring parking within or adjacent to the core and a recommended number of spaces to be provided initially.

Major Activities	Ultimate Size	Number of Parking Spaces Required		
		Minimum	Recommended	Maximum
Base Lodge	11,000 SF	5	10	15
Commercial	147,500 SF	130	200	600
Lodges	75,000 SF	30	50	80
Hotels	280,000 SF	100	180	260
Condominiums	170 Units	120	170	215
Administration	11,000 SF	15	25	50
Club House/ Marina (Handel Lake)	26,200 SF	25	75	100
Total		425	710	1,320

- Assumptions:
1. Modal split of guests, arriving at the site, is similar to that for urban downtown hotels.
 2. 10 per cent of employees live in the village.
 3. A significant employee transit system is developed.
 4. Internal shop and work trips are primarily made by the pedestrian.

Since the actual number of guests and employees using public transportation to reach the site can only be determined accurately after the development is in operation, an area adjacent to the core has been retained in its natural state to permit future expansion of the parking areas, if required. Also, some of the development in later stages may include structured indoor parking.

5.6 Recreational Facilities, Outside the Village Core

Maple Mountain Village has been planned as an all-season recreational complex. In the winter time, the village will offer alpine and cross-country skiing, snowmobiling, skating, and indoor tennis, swimming, and squash. During the summer months activities will consist of golf, tennis, squash, badminton, bicycling, swimming, boating, sailing, canoeing, fishing, horseback riding, and hiking.

The recreational facilities within the village core have been discussed in the previous section. The following deals with these facilities located outside the core area.

Care has been taken to suit the recreational development to the capability of the environment to carry it. In general, the most favourable forms of recreation at Maple Mountain are those which do not place a heavy demand on the ecology of the area, particularly the fish and wildlife populations. Care has also been taken to zone these activities so that they do not conflict with each other.

- 5.6.1 Skiing - The Maple Mountain ski runs have a maximum vertical drop of almost 900 feet and a total capacity of 4,600 skiers/day. Two of the major runs approach close to the village core. In this area will be concentrated the ticketing facilities, base lodge, ski school and other ski-related activities. A ski lift main terminal of 2,000 sq. ft. will be built as part of the base lodge. An additional, but much smaller, base

facility, 2,400 sq.ft., will be provided next to the runs closest to the north day-use parking area. It is anticipated that the majority of day visitors to the ski area will park in this lot and make use of the base facility here. Provision is made for up to 1,000 cars in this area. A lookout lodge, including a restaurant and gondola terminal, 3,500 sq.ft. in total, will be located at the top of the gondola lift.

- 5.6.2 Golf Course - An 18-hole championship golf course is planned to start and finish at the club house marina at the top end of Handel Lake. This course will wrap around the entire east side of Handel Lake and extend around the south end.

Providence will be made for further expansion of this golf course to the south, with the possible addition of a halfway house at the south end of Handel Lake.

- 5.6.3 Tennis - Twenty-four tennis courts are planned. Six of these will be close to the club house and eight will be distributed through the residential and park areas of the village. A campus of ten tennis courts will be developed to the south of the village with a club house for lockers, change rooms, etc. of 2,500 sq. ft.

- 5.6.4 Swimming - A beach will be developed along the west side of Handel Lake near the club house. Additional swimming areas may be developed near the marina on Lady Evelyn Lake.

- 5.6.5 Boating and Sailing - A marina will be constructed near the club house on Handel Lake for small boats and canoe rental. It is expected that some small sailing craft may also be able to use the lake. The major marina for the development will be on the Lady Evelyn Lake system, for a full range of water craft and activities. It will also accommodate float plane docking and servicing. A small parking area will be provided. Lady Evelyn Lake is particularly suited to boating because of its large area in excess of 14,000 acres and its

variety of scenery. Most of the other lakes in the area with the exception of Anvil Lake, are not suitable because they are smaller and biologically fragile.

- 5.6.6 Wilderness Canoeing - The area surrounding Maple Mountain is particularly well-suited to wilderness canoeing. The routes are generally circular and there are numerous opportunities for camping. The routes pass through a number of landscapes, exhibiting a variety of interesting points, including waterfalls, cliffs, viewpoints and significant changes of vegetation and topography.
- 5.6.7 Fishing - Only Lady Evelyn Lake and two other lakes, Sucker Gut and Willow Island, have significant capability to support angling. It should be noted that these are not presently highly productive lakes and their capacity to produce fish is already being used by itinerant visitors. Possible stocking with fish may be considered.
- 5.6.8 Nature Hiking & Trails - Five miles of trails will be located throughout the vicinity of the mountain. Other trails may be developed as required, but with particular care in biologically fragile areas.
- 5.6.9 Bicycling - Three miles of bicycle trails will be provided outside of the village. The trails are intended to be for recreational use by persons of all ages and will connect the village to scenic areas. Bicycle rentals will be available in the village.
- 5.6.10 Snowmobiling - Snowmobiles will be excluded from the village core and residential areas. A snowmobile rental and servicing facility will be developed as part of the service station at the north entrance to the village. Snowmobile trails will be developed to the north and west towards Makobe Lake.
- 5.6.11 Cross-Country Skiing & Snow-Shoeing - Trails for cross-country

skiing and snow-shoeing will be laid out leading north and west to Makobe Lake, with care taken to separate them from the snowmobile trails both visually and acoustically.

- 5.6.12 Horseback Riding - Horseback riding trails will be developed in the same area as the cross-country ski trail. Stables and a barn, 2,500 sq.ft. in area, will be built near the day-use parking area at the north end of the village.
- 5.6.13 Hunting - The Maple Mountain area provides very limited hunting for water fowl and moose. Hunting will, therefore, not be a significant recreational attraction; however, it could be provided elsewhere by outfitters.
- 5.6.14 Future Potential for Development - The three recreational activities requiring the largest area commitments are skiing, boating, and golfing. While not designated for development in the first few stages, consideration has been given to the long-term potential of new areas for these activities.

Makobe Lake is located northwest of the Maple Mountain complex. Makobe is the second largest lake in the area at 4,700 acres. It appears to be eminently suitable for future development of a marina and a full range of boating activities.

There is an area to the north of Makobe Lake with similar topography to that of Maple Mountain, although the vertical drop is not quite as great. This area should be given serious consideration if development of the ski facilities beyond the capacity of Maple Mountain are contemplated.

The area to the north of Handel Lake has potential for the development of a further 9 and possibly 18-holes of golf, if this is required.

The demand for camping sites and trailer parks will be met within the region close by, but not as part of the Maple

Mountain project. If it is considered necessary to develop camp grounds closer to the village, there are sites with excellent potential for this use to the north of Anvil Lake and at Makobe Lake.

5.7 Condominiums

Two of the design objectives of the Maple Mountain Village are compactness and diversity of activities within the core area. In accordance with this objective, 170 of the total of 1,000 condominium units are planned to be built right within the core. These units will occupy part of the second and all of the third storey areas above the stores and restaurants in the village.

The balance of 830 units will be built in two neighbourhoods of approximately equal size; one to the north and the other to the south of the core area. Compactness is again an important consideration, from the viewpoint of maintaining an acceptable walking distance between the units and the core, achieving the desired aesthetic goals, and minimizing the costs of servicing.

The two neighbourhoods have been designed on the cluster principle, in groups of 15 to 20 units. Access to the clusters is from short cul-de-sac roads leading from the main access roads. No units front directly on through roads. All clusters are linked to the village core by walkways which can be used in the winter as ski pathways to the terminal areas for the ski lifts.

Natural vegetation will be maintained as much as possible both between and within the clusters. Each of the units within the two neighbourhoods will have one parking space, incorporated in or immediately adjacent to the unit. Visitor parking will be in individual spaces or small lots scattered throughout the trees within each cluster. It will be shielded from view as

much as possible.

The southern neighbourhood will be constructed first in order to minimize construction traffic travelling through this area during the development of Stage 2. The southern neighbourhood will be built at a slightly lower density because of topographic considerations; 422 units on 49 acres at a density of 8.6 units/acre. The northern neighbourhood will have 408 units on 39 acres, for a gross residential density of 10.5 units/acre. The average gross residential density will be 9.4 units.

The following tables set out the number, type and location of condominium units to be built in each of the two stages of the project.

Type and Unit Size of Condominiums

<u>Type of Unit</u>	<u>Number of Units</u>			<u>Avg. Size in Sq. Ft.</u>		
	<u>Per Cent</u>	<u>Total</u>	<u>Stage 1</u>	<u>Interior</u>	<u>Exter. Allow.</u>	<u>Gross</u>
Studio	5	50	25	450	100	550
1 Bedroom	40	400	200	625	100	725
2 Bedroom	40	400	200	900	100	1000
3 Bedroom	15	150	75	1200	100	1300

Location of Condominiums

<u>Location</u>	<u>Stage 1</u>	<u>Stage 2</u>	<u>Total</u>
Village Core	78 units (63,000 SF)	92 units (74,000 SF)	170 units (137,000 SF)
Residential Neighbourhoods	422 units (464,000 SF)	408 units (448,000 SF)	830 units (912,000 SF)
Total	500 units (527,000 SF)	500 units (522,000 SF)	1000 units (1,049,000 SF)

The following average unit area requirements have been assumed for the purposes of identifying the number of units to be provided in the core and the overall densities:

For units in the village core, 800 sq.ft./unit,
For units in the neighbourhoods, 1100 sq.ft./unit.

The overall unit average is 912.5 sq.ft.

Condominium owners will be required to rent their units on a short-term basis. This not only makes the purchase of a unit a more attractive proposition to the owner, but substantially increases the rental accommodation available in the village.

The population of the 1000 condominium units would be approximately 3800 persons at full occupancy.

5.8 Support Facilities, Outside the Village Core

5.8.1 Information Centre - An information centre of approximately 1000 sq.ft. will be situated at the entrance to the village at its north end. It will be adjacent to the service station. The centre will provide information to the arriving visitor on recreational activities at Maple Mountain as well as assisting in arranging bookings for accommodation and events.

5.8.2 Vehicle Equipment Area - The major, municipal vehicle equipment and maintenance area will be located adjacent to the sewage treatment plant, north and east of Handel Lake. Approximately 5,000 sq.ft. of building space which includes 1000 sq.ft. of administrative space is to be provided.

5.8.3 Service Station - An automobile service station with 3,500 sq.ft. of building area including space for snowmobile rentals, will be located close to the entrance to the village but visually screened from the main access road.

5.9 Design Standards and Control

The plan for the village core and residential neighbourhoods described in this report is intended as a conceptual guideline. During the detailed planning and preparation for construction there may be some modification of needs; it would

be undesirable if overly precise zoning controls stifled imaginative architecture. The charm of the community will be of overriding importance in the success of the project. It is, therefore, essential that the plan be implemented in a manner which will allow necessary flexibility.

It is equally important that a degree of uniformity of design, construction materials and landscaping be achieved in order that the component parts of the village achieve a harmonious whole.

It is, therefore, proposed that a process of architectural review or development control be instituted. Detailed plans for development of each component part of the village would be examined by an architectural review committee which would determine whether the application was compatible with the overall design objectives of the Maple Mountain Project, as stated in the report, and with more detailed standards to be specified at a later date.

As an indication of the subject matter of these standards, the following have been used (or assumed) in the development of the village plan:

The village core is planned on the basis of pedestrian malls aligned on two well-defined axes at right angles to each other, closed off visually at each end by important buildings or groups of buildings. The east-west axis of 1,000 ft., a 4-minute walk, runs between the base lodge and the hotel cluster on the lake. The north-south axis of 1,300 ft., a 5-minute walk, runs between the club house and the hotel cluster.

These pedestrian malls and the system of plazas and other pedestrian areas linked to them are an essential feature of the plan and must be accommodated in all development

proposals located adjacent to them.

- Buildings must be grouped together in such a manner as to create visually interesting and functional spaces.
- The siting and dimensions of buildings can be controlled by the review of individual site plan applications.
- The maximum height of buildings will generally be three storeys, with hotels permitted to go to four storeys.
- Roof lines should be pitched in order to emphasize the nature of the mountainous surroundings.
- Landscaping will be primarily of indigenous plant materials and will conform to a landscaping master plan.
- A paving pattern should be developed for the village, with an emphasis on materials or surface texture attractive to pedestrian use, e.g. cobblestone or brick surface.
- A list of exterior construction materials will be provided by the review committee.
- Building elevations and colour schemes must be in accordance with a general policy statement and be compatible with adjacent buildings and building groups.

66



Sanitary sewer
Watermain

Scale: 800' 0 800'
April 1973



Province of Ontario
Ministry of Industry and Tourism

Regional Municipal
Infrastructure

6. MUNICIPAL INFRASTRUCTURE

6.1 Concepts & Objectives

Maple Mountain is to be a recreational complex, the success of which will depend in part on its quality and in part on the natural environment surrounding the development.

The municipal services will provide reliable year-round service combined with long life and economy of construction.

The various systems must be designed to minimize the impact of development on the environment. High standards of waste treatment and disposal are necessary to protect the streams and lakes from pollution. Efforts must be made during design and construction to reduce damage to trees and other natural features. Storm runoff will be controlled to minimize erosion and pollution of Handel Lake. The use of salt for snow melting is to be avoided.

Vehicular access will be provided to all areas but the main emphasis is on pedestrians. Therefore, the roads must not be developed in a way that hinders pedestrian movement.

Other urban services such as hydro, telephone, cable T.V. and natural gas will also be provided.

6.2 Infrastructure Design Parameters

6.2.1 Village Roads - The road system within the Maple Mountain Village is planned to provide a high level of accessibility for the automobile between residentially-developed areas and the proposed extension of Provincial Highway 558, and to avoid conflict with pedestrian travel, especially in the village core.

Two types of roads are proposed within the limits of the Maple Mountain Village: arterial and residential collectors.

The arterial roads are to be a high quality facility, designed to move vehicles between the proposed Highway 558 extension and the local residential and day-use areas, quickly, safely and with minimum interference to the pedestrian. Within this type are included the access road to the northerly day-use parking area and adjacent recreational facilities and the road from the proposed Highway 558 to and around the village core southerly to the major tennis campus at the south end of the village. These facilities would be designed for maximum speeds of approximately 30 miles per hour, except lower speeds would be provided for adjacent to the village core. Maximum gradients would be 7 per cent. Adjacent to the village core, the surface would be paved to a 30 foot width with surface drainage accommodated by either side ditches or curb and storm sewers, as required. Elsewhere, a paved surface, 22 feet in width with open ditches and swales to control surface runoff would be provided.

The residential collectors are designed to provide road accessibility to all condominium areas outside of the village core. To reduce the use of automobiles for internal trips and to enhance the joint use of these facilities by pedestrians, bicyclists and skiers, these roads are purposely designed to be very low speed and circuitous.

Typical design elements are a 15 to 20 mile per hour speed, maximum gradients up to 12 per cent, pavement widths of 18 to 20 feet with surface drainage accommodated in a system of swales and open ditches.

The alignment of all roads will be finalized only after a detailed site inspection and survey has been conducted with a view to minimizing disruption of the existing tree cover and topography.

The road grades will be kept well below the proposed maximums wherever possible, to avoid the need for winter maintenance,

such as salting and sanding. This is important to retain the ecological balance of the area and to facilitate road crossings by skiers.

Positive control of the road system to limit its use is recommended. The arterial system is laid out so that the westerly arterial road adjacent to the core can be closed during the winter season to improve the village-ski hill interface. This facility can be closed adjacent to the base lodge and can be snow-covered and groomed with the rest of the ski area. Emergency access would, however, be provided. The easterly arterial road can be closed to through traffic during the summer months. However, due to the need for access by service vehicles, fire control equipment and ambulances, as well as hotel guests, this road cannot be physically blocked. Positive traffic control will probably be necessary at each end of this section.

No formal road system will be apparent within the village core. However, some of the wider pedestrian walkways will be constructed to carry vehicular traffic to permit service and emergency vehicles access to all buildings.

- 6.2.2 Parking - In general, parking areas in or near the core, will have substantial year-round use and it is recommended that these lots be paved. The parking lots for day-use skiers and at the Lady Evelyn Lake marina will have a gravel surface.

In determining the size of the various parking areas, approximately 350 sq. ft. per car was used.

- 6.2.3 Public Transit - The possible need for public transit was identified for four types of travel related to Maple Mountain: internal trips within the village, trips from the village to the summer activity centres, trips by users to the site and the daily trips by employees residing in the Tri-Town area. Since public transit facilities are very flexible in nature the

following transit proposals are of a tentative nature and can be modified to suit variations in demand.

Internal Village Transit - Maple Mountain Village was specifically designed so that all residents would be within a ten minute walk of the core. Therefore, there is little need for a local bus service and it is recommended that such a service not be provided.

However, there are limited demands for internal public transportation for the elderly or infirm and for goods movement. These demands can perhaps best be served by a privately-operated taxi cab company and by encouraging the development of a delivery service by some of the major retail stores.

Transit Service to Summer Activity Centre - A summer activity centre is proposed on Lady Evelyn Lake. Although the facility is primarily automobile-oriented, some provision for public transit should be made to serve hotel and other guests without an available automobile. This demand could be met by the provision of one or two buses operating from June to September.

External Transit - It is expected that a significant number of persons will travel to the site by bus. However, this service can be operated by private charter bus operators and therefore, no budgeting allowance for this service has been assigned to Maple Mountain.

Employee Transit Service To Tri-Town Area - Employee residence in the Maple Mountain Village is not expected to exceed 10 per cent. The remainder are expected to commute daily from the Tri-Town area. Since one of the objectives of the development has been to minimize parking in and around the village core, parking spaces have been provided for only about half of these employees. Accordingly, provision is made to transport 400-450 persons to and from the surrounding area by public transit.

It is recommended that an employee bus service be established consisting of 7 or 8 school bus-type passenger vehicles.

SUMMARY OF TRANSIT VEHICLE REQUIREMENTS
FOR MAPLE MOUNTAIN

<u>Type of Service</u>	<u>No. of Vehicles Required</u>
Guest Transit Service to Summer Activity Centres	1 or 2 - 15 to 32 pass- enger bus
Employee Transit Service to Tri-Town Area	7 or 8 - 44 to 60 pass- enger school bus

- 6.2.4 Pedestrian and Bicycle Paths - In keeping with the pedestrian-oriented nature of the Maple Mountain complex, an extensive network of both pedestrian paths and bicycle ways is envisioned, both within and adjacent to the village.

Within the village, a joint walkway-bicycleway system is to be developed to provide direct access from all residential areas to the village core. These paths will utilize the service easements wherever possible to minimize the amount of clearing of existing vegetation. To blend with the natural environment the paths are to be kept fairly narrow, 6 to 8 feet in width and surfaced with either native material or gravel as required to provide a dry surface during the summer months. Since these trails are for use by bicycles as well as pedestrians, the use of steps and stairs on the steeper sections will be kept to an absolute minimum. These trails will be used as skiways during the winter.

Outside the village, a system of nature and hiking trails are to be developed. Initially, about twenty miles of trails are to be constructed. These trails will be similar in nature to those within the village with a native soil or gravelled surface.

A three mile bicycle trail outside of the village is also

proposed. This trail is to be 8 feet in width, with a bituminous surface and grades of less than 5 per cent to provide a comfortable ride for cyclists.

6.2.5 Water Supply - A reliable, high quality supply of water is required for domestic consumption by the visitors to Maple Mountain. Water is also required for the purpose of fighting fires and making snow. There are two potential sources of water for this development:

- a) Surface Water
- b) Ground Water

Based on the terrain evaluation done to date, indications are that an adequate aquifer to develop for water supply may not exist. Field investigations would be required to properly assess ground water resources.

Surface water supplies are available and the quality is very high as evidenced by a sample taken from Anvil Lake in February, 1973. The results of tests on the sample indicate:

		<u>CHEMICAL ANALYSIS</u>	
		<u>Actual</u>	<u>Desirable Limit</u>
Colour =	APHA Plat.-Cob. Standard	20	0
Turbidity =	JTU	0	5
pH =		6.2	6 - 8
Total Alkalinity =	ppm as CaCO_3	4.0	-
Chloride =	ppm as Cl^-	1.0	100
Sulphate =	ppm as SO_4^{-2}	19.0	250
Calcium Hardness =	ppm as CaCO_3	10.0	-
Magnesium Hardness =	ppm as CaCO_3	5.0	-
Total Hardness =	ppm as CaCO_3	15.0	-
Nitrates =	ppm as NO_3^-	0.26	45
Nitrites =	ppm as NO_2^-	0	-
Iron =	ppm as Fe^{+2}	0.12	0.3
Total Solids =	ppm	25	-
Suspended =	ppm	5	0

It is proposed, therefore, to locate a water treatment plant at the south end of Anvil Lake with an intake pipe extending out into the lake about 200 feet to a depth of 25 feet.

Water treatment would comprise one stage, high lift pumping, pressure filters, and chlorination. Filters will reduce the colour and suspended solids.

During final design, investigations may show the feasibility of locating the plant and intake pipe at Inez Lake. It was assumed at this stage that Inez Lake would be too shallow and also more turbid than Anvil Lake.

The water supply system will be designed for the ultimate population of the village. Domestic water demand will be as follows:

Population	6,000
Per Capita Consumption	80 gallons/day (GPD)
Average Day Demand	480,000 GPD (333 gallons/ minute [GPM])
Peak Day Demand	720,000 GPD (500 GPM)
Peak Hour Demand	1,440,000 GPD (1000 GPM)

Fire demand will be as recommended by the Canadian Underwriters' Association for an urban high value district.

Flow	2100 GPM
Duration	10 Hours
Total Storage	1,260,000 Gallons

It is proposed that the treatment plant be designed for the average daily flow and the pumping station be designed to produce 150% of the daily average demand. A ground reservoir will provide storage to meet peak flows plus the recommended quantity for fire protection. This reservoir will be located on the side of Maple Mountain above the village set at an eleva-

tion that will provide adequate pressure to all parts of the village at peak demand.

It is recommended that the treatment, pumping and storage facilities be constructed in two stages as follows:

	<u>Initial</u>	<u>Ultimate</u>
Treatment Plant	175 GPM	350 GPM
Pumping Station	250 GPM	500 GPM
Intake & Feedermain	500 GPM	500 GPM
Reservoir	750,000 gals. 1,500,000 gals.	

Water mains will be sized to provide a minimum pressure at any hydrant of 20 psi when the fire draught is coincident with the peak daily demand. Pipe materials may be ductile iron, asbestos cement, PVC or polyethylene.

Hydrants will be located such that no building is more than 200 feet from any hydrant. Valves will be located to facilitate maintenance and repairs.

Where feasible, water mains will be constructed in common trench with sewers at a minimum depth of cover of 6 feet. In areas of rock, further study may show the economy of insulation or heating of the water main to protect against frost, thus reducing rock excavation. When in common trench, water mains will be a minimum of 18 inches above the sewers.

Water required for snow making may be of a lower quality and may be taken from Handel Lake or from one of the perched lakes on the Mountain.

Separate water supply systems may be developed for remote facilities. The Lady Evelyn Lake marina will provide its own water supply from either the lake or a well.

The lookout lodge will have a piped system comprising booster

pumps taking water from the reservoir and a line up the mountain under the ski lift.

6.2.6 Sewage Disposal - Sanitary sewage will be produced by the village in quantities approximately equal to the water consumed (80 GPCPD*). This contaminated water must be disposed of in a manner that will not cause pollution of the surface water, will not create nuisance conditions such as algae and malodours, and will not present a health hazard to the visitors.

In general, sewage will be collected, treated to remove or change the form of the contaminants and then discharged by one of three methods. It may be distributed through tile beds into the soil; it may be distributed onto soil or vegetation by means of an irrigation system; or it may be discharged into a body of water.

Based on the terrain evaluation, the site does not appear to be suitable for large scale sub-surface disposal through tile beds. However, for some remote buildings or facilities, such as the Lady Evelyn Lake marina, tile beds may be most suitable. The lookout lodge has been considered to be provided with a sewer for the purposes of this report. Further studies may indicate the feasibility of constructing a tile bed close to the lodge.

For Maple Mountain Village, it is proposed to collect the sewage in sewers, treat it and discharge to Bessie Lake. It is also recommended that provision be made for the use of treated sewage for the irrigation of the golf course.

Preliminary discussions have been held with the Ministry of the Environment to determine the feasibility of such a development. Although no commitments or approvals can be given, they suggest that a high degree of treatment will be required.

* GPCPD - gallons/day/person

It will be necessary to undertake a study of the Bessie Lake drainage system to determine the quantity and quality of water flowing and hence, its capacity to accept effluent.

Information on stream flows was obtained from Ontario Hydro, who record flows leaving Lady Evelyn Lake. An estimate of the monthly flows through Bessie Lake was made by proportioning the flow rates to the drainage areas. The estimated minimum monthly flow is 23.7 cfs. If we assume this water is high in dissolved oxygen and low in biochemical oxygen demand, it will be capable of providing a minimum of 10 times dilution to an effluent flow of 2.4 cfs or the equivalent of about 16,000 persons, without serious detriment to its quality.

For the proposed development, the minimum dilution will be in excess of 20 times.

It is proposed to use a physical-chemical sewage treatment process for several reasons as follows:

- produces a high quality effluent,
- more consistent performance than a biological process for variable flows produced by recreational areas,
- easy to operate, highly automated,
- easy to construct as it may be partially factory assembled,
- can be economically housed for winter operation.

The degree of treatment required will be determined by future studies on the water course and standards set by the Ministry of the Environment.

Generally, sewers in the collection system will be built along the roads in common trench with the water mains. In some cases, easements will be required for the sewers because the topography will not permit a gravity system to follow the road alignment. Each block or condominium cluster will have direct access to a sewer. Some blocks may require an easement through adjacent

blocks for connection to the sewer.

Sewers will be concrete or asbestos cement of a minimum 8-inch diameter. Manholes will be of precast concrete, located at junctions and maximum 300-foot intervals. The sewer from the lookout lodge may be of polyethylene and laid without manholes.

- 6.2.7 Surface Drainage - Storm runoff and snow-melt from Maple Mountain and the village must be controlled and directed away from or through the development in a manner that will avoid erosion, ponding or flooding.

The village core will be drained with a system of catchbasins and storm sewers.

All roads will be paralleled by open ditches and condominium areas will be graded to permit drainage.

When the ski hills are developed and trees are cleared, storm runoff will increase. Adequate swales and ditches will be required to intercept the water and limit erosion.

There are two major drainage areas on the side of the mountain above the village. Each area focuses on a small perched lake. Storage of water will occur in these lakes, thus reducing peak flows. An overflow and outlet channel will be provided to Handel Lake. It is proposed to construct a concrete control structure at each lake which will discharge into a water course passing through the village. These water courses will be excavated into rock, where possible, in order to create a channel that will resist erosion. Some landscaping will be done to create a mountain stream appearance.

- 6.2.8 Solid Waste - Refuse will be collected on a regular basis from the village. The core area, hotels and commercial establish-

ments will use large containers located in adjacent service areas. Condominiums should also be served by containers located conveniently and screened if possible. Packer-type, bulk lift garbage trucks will be used to collect the refuse.

A sanitary landfill site will be located near the village. The site will be selected and designed to operate with a minimum of pollution and nuisance problems. A bulldozer will compact and cover the refuse and keep the site neat.

The landfill site may be located in a borrow pit area if it is suitable or a new site may be developed exclusively for landfill. Site preparation will include construction of ditches for diversion of drainage, an access road, and provision for the control of leachate and gas.

Waste sludge from the sewage treatment plant will also be disposed of at the landfill site.

- 6.2.9 Utilities - Other utilities which are proposed for the village are hydro, telephone and cable T.V. Natural gas and/or fuel oil may be provided also.

Generally, all of these utilities will be located underground along the road rights-of-way. Each service will be installed by the individual utility company. There may be extra capital cost charges for the provision of underground services.

- 6.2.10 Site Work - An allowance has been made in the cost estimates for the improvement and finishing of the site.

The base of the ski hill at the village will be graded to fill some swampy areas and create a reasonable grade for the run-out.

Handel Lake and the two small lakes that will be retained will

require improvements. Brush will be cleaned up and swampy areas will be filled in. A beach will be created for bathing on Handel Lake.

Site work also includes the finishing of the public space in the village core, the creation of public walkways throughout the village and foot bridges over the water courses.

An allowance has also been made for preparation of the sanitary landfill area.

6.2.11 Block Servicing - The infrastructure described and costed excludes the actual internal servicing of blocks or the connection of buildings to the underground services. The developer of each building or block will be responsible for this work. For the purpose of estimating total project costs, a cost for a typical condominium unit has been developed. This includes the cost of all works exterior to the building walls required to connect to the infrastructure.

The unit estimate includes the cost of water and sewer connections, roadways and parking areas and an allowance for landscaping.

6.2.12 Maintenance Building & Yard - It is proposed to construct a metal-clad building of the Butler-type to house equipment and provide a base for maintenance operations. A building of about 5,000 sq.ft. is proposed, to be located adjacent to the sewage treatment plant. A paved parking yard would adjoin the building.

6.2.13 Lady Evelyn Marina - A marina is proposed for Lady Evelyn Lake. Initially, an access road will be provided terminating in a small parking area with a boat-launching ramp and some docks. A marina facility, 3,000 sq.ft. is proposed. Other facilities may be provided at a later stage.

6 3 Construction Techniques

The construction of the village infrastructure at Maple Mountain will present several problems that will require planning, co-ordination and innovation to overcome.

- a) The site is remote from both labour and materials.
- b) Until the extension of Highway 558 is completed, access will be poor.
- c) A significant amount of excavation will be in rock.
- d) There must be minimum disturbance to the environment.
- e) Winters are severe and may limit or stop most outside construction.

Road alignments have been chosen to minimize excavation. Sewers and water mains are proposed in common trench to reduce rock cuts.

Pre-fabricated equipment and materials will be selected where feasible to minimize on-site construction.

On-site production of construction materials such as concrete, asphalt, crushed stone, and granular materials will be required. These operations should be co-ordinated for all contractors so that duplication of effort does not result. Preliminary terrain evaluation indicates an esker along the east side of Handel Lake. However, due to its proximity to the village and the proposed golf course and resulting defacing of the landscape if used as a granular borrow area, this area has not been considered as a granular source. Sources developed in conjunction with the construction of Highway 558 may provide the necessary sources for imported granular materials.

As early as possible, acceptable construction schedules should be negotiated with all contractors. Unrealistic deadlines would add excessive costs to the project.

6.4 Staging

The target date for completion of Stage 1 is mid-1976. A general construction schedule to meet this date has been proposed. The construction of the municipal infrastructure is proposed in two stages, approximately corresponding to Stage 1 and 2 of development of the overall project.

Certain trunk sewers and water mains will be constructed in Stage 1 to serve the ultimate development. The water treatment plant, reservoir, and sewage treatment plant will be built in two approximately equal stages, with provision made in Stage 1 to allow for easy expansion to meet the ultimate requirements.

The Construction schedule and project costs will depend on the provision of an access road. The target completion date must be contingent on the date for provision of this access.

It is anticipated that the first stage of Maple Mountain will be constructed over a period of three years. For purposes of staging construction and estimating annual costs, the village infrastructure can be broken down into four major components:

1. Sewers and watermains,
2. Roads and parking areas,
3. Reservoir and treatment plants,
4. Miscellaneous (marina, maintenance building, hiking and bicycle trails, site works and landscaping).

The constituents of each component have similar construction schedules as follows:

1. Sewers and watermains-
 - year 1 - clearing and grubbing, approximately 10% of overall construction
 - year 2 - underground work, approximately 70% of total construction costs.

-year 3 - completion of appurtenances and surface restoration (approximately 20% of the total work).

2. Roads and Parking areas -

-year 1 - clearing and grubbing (10% of total work)

-year 2 - grading and laying of base (60% of work)

-year 3 - paving and restoration (30% of work)

3. Reservoir and treatment plants -

-year 1 - no work

-year 2 - clearing and grubbing with some excavation (25% of work)

-year 3 - building of structures and completion (75% of work)

4. Miscellaneous -

-year 1 - no work

-year 2 - clearing and grubbing (20% of work)

-year 3 - completion of work (80% of work)

6.5 Capital Costs

Estimates have been prepared for the total cost of construction of the various municipal servicing components and include an engineering and contingency allowance. All costs are based on 1973 dollars and take into account the location of the site.

Because of the lack of accurate soil information, it is difficult to estimate the quantities of rock to be excavated. Estimates, therefore, show a median value and a high value based on the probable range of rock depths predicted by the terrain evaluation. More accurate field information will permit some refinement of the estimates.


Costs are presented for Stage 1 and for expansion to the ultimate development.



- Sanitary sewer
- - - Watermain
- Manhole
- ⊕ Hydrant

Scale: 200' 0 200'

April 1973



Province of Ontario
Ministry of Industry and Tourism

**Village Municipal
Infrastructure**
Stage 1



- Sanitary sewer
- - - - - Watermain
- Manhole
- ◊ Hydrant

Scale: 200' 0 200'
April 1973



Province of Ontario
Ministry of Industry and Tourism

**Village Municipal
Infrastructure**
Stage 1 and 2
Ultimate Development

Typical costs for servicing condominium units are presented on a per unit basis. An estimate of the costs of building services and landscaping of the non-public lands in the core area is also presented.

6.5.1 CAPITAL COST ESTIMATE - Stage 1

<u>Item</u>	<u>Median</u>	<u>High</u>
1. Village Roads	\$ 500,000	\$ 580,000
2. Lady Evelyn Lake Access Road	100,000	120,000
3. Parking Areas	220,000	260,000
4. Hiking, Nature, Bicycle and Snowmobile Trails	150,000	200,000
5. Water Treatment Plant	210,000	250,000
6. Reservoir	160,000	180,000
7. Water Distribution System	580,000	870,000
8. Sewage Treatment Plant	400,000	480,000
9. Sanitary Sewers	590,000	840,000
10. Surface Drainage	110,000	140,000
11. Underground Hydro, natural gas and telephone.	500,000*	500,000*
12. Site Works	160,000	220,000
13. Maintenance Building & Yard	100,000	120,000
14. Lady Evelyn Marina	25,000	30,000
	<u>\$3,805,000</u>	<u>\$4,790,000</u>

6.5.2 CAPITAL COST ESTIMATE - Stage 2

<u>Item</u>	<u>Median</u>	<u>High</u>
1. Roads	\$ 110,000 .	\$ 130,000
2. Parking Areas	100,000	120,000
3. Water Treatment Plant	90,000	110,000
4. Reservoir	150,000	170,000
5. Water Distribution System	40,000	70,000
6. Sewage Treatment Plant	340,000	400,000
7. Sanitary Sewers	50,000	80,000

CAPITAL COST ESTIMATE - Stage 2 (Cont'd)

<u>Item</u>	<u>Median</u>	<u>High</u>
8. Surface Drainage	\$ 10,000	\$ 10,000
9. Underground Hydro, Natural Gas and Telephone	150,000*	150,000*
10. Site Works	<u>30,000</u>	<u>40,000</u>
	\$1,070,000	\$1,280,000

*Not a capital estimate but a possible contribution toward capital costs.

6.5.3 Condominium Servicing Costs - (Per Typical Unit)

a) Sewer Connection	\$50
b) Water Supply & Hydrants	\$120
c) Paved Roads	\$530
d) Landscaping Allowance	<u>\$300</u>
Total	\$1,000 per unit or \$1.00 to \$1.25 /sq.ft.

This cost should be added to the condominium building costs.

6.5.4 Village Core Servicing Cost - This is an estimate of the cost of providing service connections and some basic landscaping of the non-public lands around the buildings in the core area. These costs should be added to the core area building costs.

a) Landscaping and Paving	\$175,000
b) Sewer & Water Building Services	<u>25,000</u>
Total	\$200,000 - Approximately \$0.25/ sq.ft. of gross building area.

6.5.5 Other Capital Costs - The preliminary capital cost estimates identified in this section relate to the basic municipal infrastructure within the village. Other significant items, not

included in these estimates are the following:

	<u>Responsibility</u>
-External Access Road	Ministry of Transportation and Communications
-Ski Facilities	P.S. Ross & Partners
-Recreational, Commercial and Residential Buildings	J. Neilson Management Limited

6.6 Operating Costs

A modern village such as the one proposed for Maple Mountain will require a contingent of skilled and semi-skilled labour plus a pool of modern equipment to operate and maintain the facilities that are to be provided.

Initially, a minimum staff with some basic equipment will be required. As the town grows, equipment will be rented or tasks will be sub-contracted until such time as it is deemed feasible to purchase the equipment or hire the staff for the necessary work.

Following is a preliminary estimate of the annual operating and maintenance costs of the municipal infrastructure for the Stage 1 facilities only. These costs are for labour and materials only and exclude the capital cost of equipment. An allowance for the maintenance and operating costs of the equipment are, however, included.

SUMMARY OF OPERATING COSTS - Stage 1

Solid Waste Removal & Disposal	\$ 35,000
Sewage Treatment Plant	40,000
Water Treatment Plant	25,000
Internal Roads	60,000
Parking Lots	60,000

SUMMARY OF OPERATING COSTS - Stage 1 (Cont'd)

Sewers	\$ 30,000
Water Mains	30,000
Public Transit	130,000
General Landscaping	15,000
Miscellaneous	<u>15,000</u>
TOTAL	\$450,000

6.7 Maintenance Equipment

Capital expenditures will be required to provide maintenance and operating equipment for the Maple Mountain resort. A preliminary evaluation of the requirements suggests that the following equipment schedule, relating primarily to the maintenance and operating of municipal services, would be suitable for establishing budget estimates for Stage 1:

Half-Ton Pick Up Truck	2	@	\$ 3,500	\$ 7,000
Front End Loader Back-Hoe	2	@	15,000	30,000
Bulldozer	1	@	65,000	65,000
5-Ton Dump Truck with Snow Plow Attachment	2	@	10,000	20,000
Bulk-Lift Garbage Truck	1	@	40,000	40,000
Inventory of Parts, Tools and Small Equipment				30,000
Buses	1 (15-32 Pass)	@	20,000	20,000
	4 (44-60 Pass)	@	15,000	60,000

Other equipment, primary for the operation of the village, for which capital cost estimates must be provided include ambulance, police and fire trucks.

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7. CLOSING

The process of development of the Maple Mountain complex is expected to extend over many years. Stage 1 is tentatively scheduled for completion and opening in 1976. The most critical consideration in meeting this schedule is the provision of good access to the site by way of extension of Highway 558. To date, this matter is not fully resolved.

The work undertaken by Marshall Macklin Monaghan Limited is conceptual in nature, setting out basic land-use and urban design features and municipal servicing requirements and costs. It is expected that during the subsequent planning and design phases, considerable modification, all hopefully within the concept and budget costs, will take place as more detailed information becomes available.

The concept is premised on the Province of Ontario undertaking the development of the basic recreational and municipal infrastructure as the developer, with private enterprise handling the actual construction and operation of the many commercial activities. Similarly, private enterprise would construct the condominium units for sale to the public. In this way, the Province would provide a stimulant to private development in the area. A major consideration of the overall project is the creation of a major employment centre in the region.

The data, upon which this work has been based, is general and in keeping with the conceptual nature of the proposal to date. In subsequent phases, a work program to include the examination of detailed aspects of environmental impact, geotechnical and topographic surveys, complete design of the infrastructure components, and detailed urban design and architectural considerations will all be necessary to ensure the development of the Maple Mountain complex to the highest standards with an atmosphere and character equal to the leading holiday resorts in North America.

